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MINOR FORMS OF NORTH AMERICAN SPECIES OF *ROSA*

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During the study of the North American rose species east of the Rocky Mountains, several unique and distinct forms have been observed. Variants include: individuals with more than five petals in each flower; those with white rather than pink petals; specimens having unarmed floral stems where armature is typical; and those with glandular-hispid hypanthia and pedicels when the expression for these characters is normally eglandular. Since their distinctiveness eliminates any possible confusion in naming them, since transplant studies have shown that the forms are not expressions of environmental modification, and since they may be of considerable importance to other biological disciplines (plant breeding, horticulture), it is felt that natural variations such as these should be given nomenclatural recognition at the rank of form. These several variations are doubtless the result of different types of genetic situations such as gene mutations, gene combinations controlling expression in certain cases (as probably with armature), and others.

With the new taxa are included new combinations that have been modified in view of the evidences obtained from a revision of the North American roses (Lewis, 1957a).

1. *R. nitida* Willdenow, f. *spinosa* f. nov.

R. carolina L., var. *setigera* Crépin. RHODORA 2: 113 (1900) pro syn.

R. carolina x *R. nitida* Crépin. RHODORA 2: 113 (1900).

R. nitida x *R. palustris* Rydberg. N. Am. Fl. 22: 496 (1918).

? *R. nitida* x *R. virginiana* Rydberg. N. Am. Fl. 22: 502 (1918).

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Caulis florens armatus setis tenuibus et amplificatis infrastipulatis spinis saepe inparem. Floral stems armed with fine bristles and enlarged infrastipular thorns, often in pairs. Very rarely these stems are without the bristles typical of *R. nitida* and have only infrastipular thorns. The kind of armature is the only certain way in which the form may be differentiated from *R. nitida*.

HOLOTYPE.—Wilton, Franklin County, Maine. *M. L. Fernald*. 11 Aug. 1894 (GH).

Both Crépin (1900) and Rydberg (1918) believed f. *spinosa* to be a hybrid between *R. palustris* Marshall and *R. nitida*. Considering the success of many artificial hybrids between most diploid Cinnamomeae species (Erlanson 1934), such a cross could conceivably be possible in nature. The F₁ generation might even be male fertile as, for example, has been found in the progeny of *R. Woodsii* x *R. blanda* and *R. blanda* x *R. pisocarpa* crosses (Flory 1950). The small amount of abortive pollen (16%) found from a specimen of f. *spinosa* collected at Orono, Maine, would add evidence to this opinion. The difficulty with this approach arises, however, when it is realized that one of the parents, *R. palustris*, is not known from Newfoundland or central and northern Nova Scotia (some specimens from the latter province have been confused with *R. palustris*, but they are *R. virginiana* Miller). Since typical specimens of *R. nitida*, f. *spinosa* have been examined from Newfoundland at St. George Bay and at St. John's, it hardly seems possible that the form is a result of a cross between *R. palustris* and *R. nitida* when the variation is found in a region separated by hundreds of miles of water from one of the parents. It has been pointed out to the author, however, that a bird might transport the hybrid fruit from an area where such a hybrid is possible and deposit it in an area some distance from one of the parents. Although such an event would explain the occurrence of the form in Newfoundland, there is no evidence as yet to support this theory. Until *R. palustris* is definitely established as native to Newfoundland, experimental hybridization produces a phenotype similar to f. *spinosa*, or until bird migration is known to be a significant factor here, the form is considered a non-hybrid variation of *R. nitida*.

Rosa nitida x *R. virginiana* of Rydberg (1918) tentatively has been placed in synonymy under *R. nitida*, f. *spinosa*. Erlanson's

(1934) data showed that artificially produced F_1 plants from these species were highly sterile—a condition not apparent in the pollen of f. *spinosa* from Orono, Maine. This plant is morphologically similar to those cited by Rydberg as representative of the hybrid, *R. nitida* x *R. virginiana*.

Selected specimens examined:—CANADA. NEWFOUNDLAND: St. John's, *Robinson & Schrenk*, 3 Aug. 1894¹ (GH). QUEBEC: Stanstead Co.: Magog, *Pease* 728 (GH). UNITED STATES. MAINE: Franklin Co.: Wilton, *M. L. Fernald*, 11 Aug. 1894 (as *R. carolina* x *nitida* ? by Crépin; as *R. nitida* x *palustris* by Rydberg; as *R. palustris* ? by Fernald) HOLOTYPE (GH). Kennebec Co.: Pine Point, Scarborough, *Hyland* 321 (MAINE). Penobscot Co.: Bangor bog, Orono, *Fernald* 2958 (MAINE). Piscataquis Co.: Foxcroft, *G. B. Fernald* 161 (GH), *Fernald* 319 (GH). Washington Co.: West Sidney, *Hyland* 115 (MAINE). NEW HAMPSHIRE: Coös Co.: Pike pond, Stark, *Pease* 23778 (GH).

2. *R. palustris* Marshall, f. *inermis* (Regel) stat. nov.

R. hudsoniana Thory ex Red. *Roses* 1: 95 (1817).

R. hudsoniana salicifolia Thory ex Red. *Roses* 1: 95 (1817).

R. carolina salicifolia Seringe ex DC. *Prod.* 2: 605 (1825).

R. carolina L., var. *inermis* Regel. *Tent. Ros. Mon.* 78 (1877).

R. carolina inermis Schuette. *Am. Ass. Adv. Sci.* 46: 279 (1898).

R. palustris Marshall, var. *inermis* (Schuette) Erlanson. *Pap. Mich. Ac. Sci. Arts & Let.* 5: 90 (1925).

Individuals typical of *R. palustris* except that the floral stems are without armature. The form occurs infrequently throughout the range of the species.

Selected specimens examined. CANADA. ONTARIO: Muskoka Co.: Dorset, *C. Huber* 5854 (as *R. palustris* Marsh., var. *inermis* (Schuette) Erl.) (GH). UNITED STATES. CONNECTICUT: Windham Co.: Plainfield, Wauregan, *Sheldon* 537 (as *R. carolina*) (GH). FLORIDA: Putnam Co.: Welaka, *Laessle*, 26 June 1940 (FLAS). MAINE: Hancock Co.: Seal Harbor, Mount Desert I., *Redfield*, 21 Aug. 1890 (as *R. carolina*) (GH). MASSACHUSETTS: Berkshire Co.: Lenox, *Hoffmann*, 11 Aug. 1911 (as *R. carolina*) (GH). Norfolk Co.: Milton, *Churchill*, 17 July 1898 (as *R. carolina*) (GH). MICHIGAN: Charlevoix Co.: Boyne City, *Erlanson* 5789/B (as *R. palustris* var. *inermis*) (MICH). Cheboygan Co.: Lancaster Lake, *Ehlers* 613 (as *R. carolina*) (GH). NEW YORK: Monroe Co.: Manitou Beach, *Killip* 7843 (as *R. carolina*) (GH). Tompkins Co.: near Spencer Lake, *Muenschler & Bechtel* 520 (as *R. carolina*) (GH). TENNESSEE: Unicoi Co.: Unaka Springs, *Lyle* 19415 (TENN). VERMONT: Rutland Co.: East Wallingford, *Kent*, June 1897 (as *R. carolina*) (GH). WISCONSIN: Brown Co.: Blesh's Farm, *Schuette*, 22 June 1890 (as *R. carolina inermis*) (GH).

3. **R. palustris** Marshall, f. **alba** (Rafinesque) stat. nov.

R. carolina L., var. *alba* Rafinesque Ann. Gen. Sci. Phys. 5: 214 (1820).

This form established by Rafinesque (1820) as a variety of *R. carolina* L. (Sp. Pl. 1: 703, 1762) non L. (Ibid: 492, 1753) is nomenclaturally corrected in combination with the binomial for the eastern swamp rose. No white petaled specimens have been observed in this study.

4. **R. palustris** Marshall, f. **plena** f. nov.

R. carolina L., var. *pimpinellifolia* Rafinesque. Ann. Gen. Sci. Phys. 5: 214 (1820) pro parte.

R. hudsoniana flore multiplici Thory. Prod. Gen. Rosa 147 (1820).

R. hudsoniana subcorymbosa Thory ex Red. Roses 2: 109 (1821).

R. carolina L., var. *scandens* (Thory) Seringe ex DC. Prod. 2: 605 (1825).

R. carolina L., var. *hemisphaerica* Seringe ex DC. Prod. 2: 605 (1825).

A form of *R. palustris* with more than five petals in each flower. No specimens have been observed.

5. **R. Woodsii** Lindley, f. **hispida** f. nov.

R. adenosepala Wooton & Standley. Contr. U. S. Nat. Herb. 16: 131 (1913) pro parte.

R. MacDougali x *R. ultramontana* Rydberg. N. Am. Fl. 22: 523 (1918).

Hypanthia sunt glandulari-hispida et plerumque cum pedicellis glandulari-hispidis. Hypanthia are glandular-hispid and usually with glandular-hispid pedicels. Accompanying the glandular-hispid hypanthia and pedicels in the type are glandular leaflets, gland-tipped double serrations, glandular stipules, and hispid petioles.

HOLOTYPE: Near Helena, Lewis & Clark County, Montana. *F. D. Kelsey*, June 1892 (as *R. Fendleri*). Herbarium of Montana State College.

Selected specimen examined. MONTANA: Missoula Co.: Missoula, *Sandberg*, Aug. 1892 (as *R. pisocarpa*) (MIN).

6. **R. blanda** Aiton, f. **carpohispida** (Schuette) stat. nov.

R. blanda carpohispida Schuette. Proc. Am. Ass. Adv. Sci. 46: 279 (1898).

R. blanda Aiton, var. *hispida* Farwell. Pap. Mich. Ac. Sci. Arts & Let. 2: 25 (1923).

Rosa blanda which has glandular-hispid hypanthia and pedicels. The floral stems may be somewhat bristly. Although this description approaches that for the individuals intermediate between *R. blanda* and *R. palustris*, the forma is known to occur north of the range of *R. palustris* on the Gaspé, Quebec (Erlanson 1934).

Selected specimens examined. MAINE: Penobscot Co.: Greenbush, near Cardville, *Hyland 816* (as *R. blanda*, var. *hispida*) (MAINE). MICHIGAN: Houghton Co.: Grand Traverse Bay, *Richards 3644* (as *R. blanda*, var. *hispida*) (MAINE). MINNESOTA: Houston Co.: near Bee, *Butters & Rosendahl 3827* (MIN). Rice Co.: 10 mi. w. Northfield, *Butters & Rosendahl 2897* (MIN). Saint Louis Co.: Duluth, *Lakela 1482* (as *R. suffulta*) (MIN). Yellow Medicine Co.: Granite Falls, *Moyer 358* (as *R. humilis*) (MIN). WISCONSIN: Ashland Co.: 3. Ashland, *Richards 3402* (as *R. blanda*, var. *hispida*) (MAINE). Door Co.: Little Sturgeon Bay, *Schuetz*, 17 Aug. 1891 (as *R. humilis* x *R. blanda*) (US).

7. *R. arkansana* Porter, f. *alba* (Rehder) comb. nov.

R. pratincola Greene, f. *alba* Rehder. Mitt. Deutsch. Dendr. Ges. 1910 (19): 252 (1911).

R. arkansoides Schneider, f. *alba* Schneider. Ill. Hand. Laubh. 2: 971 (1912).

R. heliophila Greene, f. *alba* Rehder. Mitt. Deutsch. Dendr. Ges. 1915 (24): 222. 1916.

R. suffulta Greene, f. *alba* Rehder. Journ. Arn. Arb. 3: 17. 1921.

Since the pubescent leafed variation (= *R. suffulta* Greene) of this species is not considered specifically distinct, the white petaled form is combined with *R. arkansana*.

8. *R. arkansana* Porter, f. *plena* f. nov.

Forma ultra quinque petala in florem. A form typical of *R. arkansana* except that as many as twenty petals are found in a single flower.

HOLOTYPE. The form is known only from one locality, Woodrow, Saskatchewan and has been distributed by P. H. Wright. Individuals have been planted at The Blandy Experimental Farm, Acc. No. 12876-54 (*Lewis 2310*). Herbarium specimens are deposited in the U. S. National Herbarium (holotype) and the Bailey Hortorium.

9. *R. arkansana* Porter, f. *setulosa* (Cockerell) comb. nov.

R. pratincola setulosa Cockerell ex Daniels Fl. Bould. Colo., Univ. Mo. Stud. Sci. Ser. 11 (2): 148. 1911.

R. suffulta Greene, f. *setulosa* Cockerell. Torreyia 18: 179 (1918).

The form has glandular-hispid hypanthia and usually glandular pedicels. The isotype was collected by Cockerell at Boulder, Boulder County, Colorado.

Selected specimens examined. COLORADO: Boulder Co.: Boulder, *T. D. A. Cockerell* (as *R. suffulta setulosa*) ISOTYPE (US). El Paso Co.: 5 mi. from Colorado Springs, *Penfound*, 18 July 1924 (COLO). Larimer Co.: Fort Collins, *Harrington 3262* (COLO). MONTANA: Big Horn Co.: 6 mi. s. Pryor, *Charff*, 10 June 1953 (MONT).

10. *R. carolina* L., f. **plena** (Marshall) stat. nov.

R. pennsylvanica plena Marshall. Arb. Am. 136 (1785).

R. parviflora pleno Ehrhart. Beitr. Nat. 4: 21 (1789).

R. pennsylvanica var. *flore pleno* Andrews. Roses 2: No. 102 (1828).

R. caroliniana var. *flore pleno* Andrews. Roses 2: No. 104 (1828).

R. carolina conglobata Trattinick. Rosac. Mon. 2: 156 (1823).

R. parviflora (*flore multiplici*) Thory ex Red. Roses No. 11 (1824).

R. humilis Marshall, var. *plena* Best. Journ. Trent. Nat. Hist. Soc. 2: 1 (1889).

R. carolina L., var. *plena* (Marshall) Lynes. Bailey 3: 58 (1955).

First described in the eighteenth century, the double petaled form of *R. carolina* has recently been nomenclaturally revised by Lynes (1955). In this study the rare variation is reduced to forma status.

11. *R. acicularis* Lindley, subsp. **acicularis**, f. **alba** (Nakai) comb. nov.
R. acicularis Lindley, var. *Gmelini* (Bunge) Meyer, f. *alba* Nakai. Bot. Mag. Tokyo 30: 241 (1916).

Among the many specimens of this subspecies examined from Europe and Asia, only one had entirely white petals rather than the typical pink. The material was collected in Tobolsk, Omsk R. S. F. S. R. (LE). Nakai (1916) cited the following localities: "Ham-gyöng austr.: Atok-ryöng (*Nakai 1825*) Cho-työng-ryöng (*Nakai 1569*)."

12. *R. acicularis* Lindley, subsp. **Sayi** (Schweinitz) Lewis, f. **plena** f. nov.

Forma ultra quinque petala in florem. A form typical of *R. acicularis* subsp. *Sayi* (Lewis 1957b) except that as many as fifteen petals occur in each flower.

HOLOTYPE. The form is known from only one locality, Moose Range, Saskatchewan. Herbarium specimens from plants growing at The Blandy Experimental Farm (Acc. No. 13386-56) are deposited in the U. S. National Herbarium (holotype) and the Bailey Hortorium.

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College Herbarium (MONT); University of Tennessee Herbarium (TENN); and the U. S. National Museum, Smithsonian Institution (US).

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NOTES ON NEARCTIC HEPATICAE VI. PHYTO-
GEOGRAPHICAL RELATIONSHIPS OF CRITICAL
SPECIES IN MINNESOTA AND ADJACENT
AREAS OF THE GREAT LAKES

R. M. SCHUSTER

(Concluded from p. 234)

(7) APPALACHIAN SPECIES OCCURRING NORTHWARD TO THE LAKE SUPERIOR
REGION AND NEAR OR IN THE DRIFTLESS AREA

A number of species show this distribution pattern, *Diplophyllum apiculatum* (Fig. 13) and *Mannia rupestris* (Fig. 17) being perhaps typical. In both cases the population occurring near Lake Superior is somewhat disjunct, and represents the outlying population. A comparison of the distribution of the Appalachian endemic, *Diplophyllum apiculatum*, with that of another species of presumably Appalachian origin, *Tsuga canadensis*, is not without validity. The occurrence of such species of temperate occurrence around the shore of Lake Superior (and to the south in and near the Driftless Area), strongly suggests that the bulk of the distribution of these species is restricted to nonglaciated areas, with the restricted range around Lake Superior due to post-Pleistocene migration northward from a Pleistocene refugium in the Driftless Area. This thesis will be examined in more detail in the summation.